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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/581,328	06/01/2006	Georg Muhlthaler	WUE-60	3182

7590 06/24/2010  
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EXAMINER
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GREEN, RICHARD R

ART UNIT	PAPER NUMBER
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3644

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/581,328	<b>Applicant(s)</b> MUHLTHALER ET AL.	
	<b>Examiner</b> Richard R. Green	<b>Art Unit</b> 3644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 01 March 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 19-22 and 27-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 19-22 and 27-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/1/2010 has been entered.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 19-22 and 27-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,658,881 to Plattner in view of U.S. Patent 6,481,228 to Chiang et al.

**Regarding claims 19, 27, 28 and 32:** Plattner teaches in figs. 1 and 7A-D an aircraft (16) having a cooling device (14) for expelling heat from a heat source (the cabin interior) located in the interior of the aircraft to a heat sink (the outside air), comprising:

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A piping system (pipes of fig. 1) sealed against the surrounding atmosphere (c. 2, ¶. 47-65: the air conditioning system is a dual phase refrigerant cycle) having a heat intake section (22) thermally coupled with the heat source and a heat output section (12) thermally coupled with the heat sink, and an essentially adiabatic conveyance section located therebetween, whereby the piping system is filled with a heat conveyance medium which, when heat is received in the heat intake section from the heat source, undergoes a transition from the liquid phase to the gaseous phase, then flows into the heat output section, then condenses when discharging heat to the sink, and then flows back to the heat intake section (c. 2, ¶. 47-65);

wherein said heat sink includes a section of an internal wall of the aircraft (fig. 2B; c. 3, ¶. 14-19: the back wall 28 of the condenser enclosure is mounted directly to the skin of the aircraft); and

a cold storage unit (18) provided between the heat source and the heat sink, the cold storage unit collecting cooled liquid phase heat conveyance medium (c. 2, ¶ 23-27: "receiver/dryer 18 stores the liquid refrigerant") for use when cooling requirements are increased, such as when the aircraft is on the ground (the stored refrigerant is considered capable of use at such times).

Plattner fails to teach a regulation device operatively connected to a ventilator and regulation valve to control the transfer of heat between a heat exchanger of the piping system and the heat source and to control the quantity of heat conveyance medium flowing to or from the heat exchanger.

Chiang teaches in fig. 23:

a heat exchanger (30) for an evaporator of a cooling device (c. 5, l. 41-50), which is operatively connected to a ventilator (40);

a regulator valve (such as at 38) operatively connected to the piping of the evaporator to control the quantity of heat conveyance medium flowing to or from the heat exchanger (c. 6, l. 38-57: various valves are taught for controlling the quantity of refrigerant flow);

a temperature sensor (41) located adjacent the heat source (in the region of the evaporator/heat intake section) so as to detect the temperature thereof, the temperature sensor operatively connected to the cooling device so that the cooling device can respond to the temperature detected by the temperature sensor; and

a regulation device (42) operatively connected to the ventilator and to the regulator valve so as to control the ventilator and regulator valve according to the temperature detected by the temperature sensor (c. 6, l. 28-35: "By regulating the speed of the blower 40, the flow rate of the heat transfer medium or the speed of the compressor ... the supply air temperature can be controlled"; see also c. 7, l. 13-26).

It would have been obvious to a person having ordinary skill in the art at the time of the invention to use the heat exchanger of Chiang, including its ventilator, regulator valve, temperature sensor, and regulation device, with the evaporator of Plattner, for the purpose of controlling the heat transfer at the evaporator.

**Regarding claim 20:** the pipes of the piping system of Plattner are closed, and one end of the system is the heat intake section, while the other end of the system is the heat output section, and both ends are connected by the piping therebetween.

**Regarding claim 21:** Plattner teaches use of the cooling device to cool electronics inside the aircraft (c. 1, l. 19-34).

**Regarding claim 22:** a compressor (24) of Plattner provides means for controlling the flow of the refrigerant between the heat intake and output sections.

**Regarding claim 29:** the piping system of Plattner forms a closed circuit which connects the heat source and sink via a feed line and discharge line (see fig. 1).

**Regarding claim 30:** the cold storage unit (18) of Plattner is located in a special circuit with a special piping system (the cold storage unit is located in the piping system of the cooling device, which may be considered special, as its use is exclusively for the cooling device).

**Regarding claim 31:** when the aircraft is in a rest condition, the heat sink is located geodetically higher than the cold storage unit (see for example figs. 7A-7D, where the condenser is located on the top of the aircraft). Plattner is silent as to the location of the evaporator relative to the reservoir 18. However, the electronics would have to be located geodetically lower than a location on top of the aircraft, and it would have been obvious to a person having ordinary skill in the art at the time of the invention to place the evaporator near to the electronics, and moreover to retain the general relative arrangement of fig. 1, keeping the reservoir between the evaporator and condenser, to minimize the length of piping required.

**Regarding claim 33:** Plattner teaches storing refrigerant in the receiver (c. 2, l. 23-27: "receiver/dryer 18 stores the liquid refrigerant").

**Regarding claim 34:** Plattner is silent on releasing stored refrigerant, however it would have been obvious to a person having ordinary skill in the art at the time of the invention to release stored refrigerant when it is needed, such as when the aircraft has an increased cooling requirement, in order to increase the cooling capacity of the cooling system to match the increased cooling requirement.

### ***Response to Arguments***

Applicant's arguments with respect to claims 19-22 and 27-34 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard R. Green whose telephone number is (571)270-5380. The examiner can normally be reached on Monday - Thursday 8:00 am - 6:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Mansen can be reached on (571)272-6608. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/R. R. G./  
Examiner, Art Unit 3644

/Tien Dinh/

Primary Examiner, Art Unit 3644